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Promoting and protecting the health of the public and the environment

South Carolina
Reportable Lab Results/Electronic Laboratory Reporting (ELR)
HL7 version 2.5.1
Implementation Guide

Version 1.0

NOTE: *This implementation guide is intended to help hospitals structure information for submission of electronic laboratory results to South Carolina Department of Health and Environmental Control, but should not be considered the definitive implementation guide. The HL7 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health documents should be used to structure messages.*

**** South Carolina Department of Health and Environmental Control reserves the right to change its requirements and/or update the contents of this implementation guide at any time.***

Table of Contents

Key Terms and Acronyms Defined

Term/Acronym	Definition
CAH	Critical Access Hospital
CDC	Center for Disease Control
CMS	Centers for Medicare and Medicaid Services
EH	Eligible hospital
EHR	Electronic Health Record
ELR	Electronic Laboratory Reporting
EP	Eligible professional (physician offices/group practices)
HL7	Health Level 7
IG	Implementation Guide
MQF	Message Quality Framework
MU	Meaningful Use
NIST	National Institute of Standards and Technology
O	Optional segment(s) and field(s)
ONC	Office of the National Coordinator for Health Information Technology
PHIN	Public Health Information Network
PHINMS	Public Health Information Network Messaging System
R	Required segment(s) and field(s)
RE	Required, but can be empty
SC DHEC	South Carolina Department of Health and Environmental Control
SFTP	Secure File Transfer Protocol

Process Overview

Purpose:

To implement electronic submission of reportable lab results/electronic lab results (ELRs) from an eligible hospital (EH) or critical access hospital (CAH) to the South Carolina Department of Health and Environmental Control (SC DHEC) in alignment with:

- HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm) **dated February 2010**
- Errata and Clarifications HL7 v2.5.1 Implementation Guide: Electronic Laboratory Reporting To Public Health (US Realm), Release 1 **dated October 2011**
- ELR 2.5.1 Clarification Document for EHR Technology Certification, V1.2 **dated March 2013**

Process Steps:

The following list provides an overview of the process. This guide provides detailed explanations for each of the steps. Refer to the flowchart for a diagram of the process.

1. Client acquires:
    - SC ELR Implementation Guide
    - SC ELR Registration (available on MU website)
    - SC List of Reportable Conditions
    - SC Laboratory Reporting List
    - Health Level Seven (HL7) Standard Electronic Laboratory Reporting to Public Health-Release 1, Feb 2010
    - Release 1 Errata Document which is part of the ELR251 R1 download from HL7,
    - ELR 2.5.1 Clarification Document for EHR Technology Certification, V1.2

2. Client completes registration and emails it to muhelpdesk@dhec.sc.gov for the MU registration.

3. Client builds ELR messages.

4. Client validates message using:
    - NIST ELR Validation Tool
    - CDC's Message Quality Framework (MQF) (Reporting Receiver Profile)

5. Client saves the validation report (pdf or screenshot). Client emails validation reports to reflect progress and 0 error reports to muhelpdesk@dhec.sc.gov. **With a zero-error validation report, the client needs to send a .txt file of the message using TEST DATA.**

    Test a variety of messages if applicable to your Laboratory's capabilities (hepatitis, HIV, STD, parasitology, Lead, Micro C&S, etc.) to ensure messages meet the requirements.

6. SC DHEC reviews messages and confirms validation reports. If SC DHEC identifies errors (structural or vocabulary), the client is notified by email.

7. SC DHEC sends transport mechanism implementation package to client.

   Clients seeking Stage 1 attestation can use Secure File Transfer Protocol (SFTP) or Public Health Information Network Messaging System (PHINMS.) Clients seeking Stage 2 attestation must use PHINMS.

8. Client implements transport mechanism capability at sender location

9. Client reports successful implementation of sender transport mechanism capability to SC DHEC.

10. SC DHEC manages the testing and confirmation of transmission capabilities between sender and SC DHEC.

11. Client transmits initial VALIDATED batch of test messages from sender's electronic health record (EHR) system.

12. SC DHEC confirms message receiving and sends confirmation letter if needed.

-- STOP HERE FOR MU STAGE 1 --
-- CONTINUE TO STEPS BELOW FOR MU STAGE 2 --

13. Client transmits more VALIDATED test message batch files from sender’s EHR system.

14. SC DHEC validates message contents.

15. Go Live after consecutive valid test message files.

Key Guidance

1. This implementation guide is intended to help hospitals structure information for submission to SCDHEC, but should not be considered the definitive implementation guide. The HL7 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health documents should be used to structure messages.

2. These documents are also used to fulfill Meaningful Use ELR submission.

3. Please note that due to SCDHEC's processing restrictions and application limitations some of which are beyond SCDHEC's control, some modifications to the requirements or constraints on those requirements are required for submitting ELRs to SCDHEC.

4. Definitions of Usage Codes in the column labeled "Required by DHEC"

Code	Definition
R	Required segment(s) and field(s)
RE	Required, but can be empty
O	Optional segment(s) and field(s)
BLANK CELLS	Fields not required by SCDHEC.

SC DHEC cannot process HL7 messages unless all fields denoted "R" are complete.

All fields labeled "RE" and "CE" are to be considered "R" for the purposes of this testing.

5. Cardinality Dictionary

Cardinality	Definition
[0..1]	Segment may be omitted and can have, at most, one occurrence
[1..1]	Segment must have exactly one occurrence
[0..*]	Segment may be omitted or repeat an unlimited number of times
[1..*]	Segment must appear at least one, and may repeat unlimited number of times.

6. Please consult the HL7 documentation for references to Value Sets (coding tables used), specific formatting for Microbiology Culture & Antibiotic sensitivities (C&S) results, data type definitions and formatting, and field length restrictions.

7. It is highly recommended that the client validate its messages using the NIST Validation Tool and/or CDC PHIN Message Quality Framework (MQF) Message Validation Tool (link is provided below under "Resources").

8. Senders must establish or obtain OIDs as necessary per the recommendations contained in the latest version of "HL7 Implementation Guidance for Unique Object Identifiers (OIDs)." HL7 members may download this document from the member website. Non-HL7 members may purchase the document from the on-line HL7 store.

Resources

- SC DHEC Meaningful Use – Reportable Labs (ELR)
  http://www.scdhec.gov/Health/FHPF/MeaningfulUse/Labs/

- South Carolina List of Reportable Conditions:
  http://www.scdhec.gov/administration/library/CR-009025.pdf

- Centers for Medicare & Medicaid Services (CMS) EHR Incentive Programs Overview:
  http://www.cms.gov/EHRIncentivePrograms/30_Meaningful_Use.asp#TopOfPage

- CMS Attestation Requirements for Reportable Lab Reports objective:

  Stage 1: http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/9_Reportable_Lab_Results_to_Public_Health_Agencies.pdf

  Stage 2: http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_HospitalCore_14_SubLabResults.pdf

- CDC Meaningful Use Introduction: http://www.cdc.gov/EHRmeaningfuluse/introduction.html

- CDC PHIN Message Quality Framework (MQF) Validation Tool: https://phinmqf.cdc.gov/

- NIST Electronic Laboratory Reporting Validation Tool: http://hl7v2-elr-testing.nist.gov/mu-elr/

- NIST's Google groups for developers (HL7v2 Reportable Lab Testing):
  https://groups.google.com/d/forum/hl7v2-reportable-lab-testing

- HL7 Documents: https://www.hl7.org/implement/standards/product_brief.cfm?product_id=98
  - HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm) **dated February 2010**
  - Errata and Clarifications HL7 v2.5.1 IG: Electronic Laboratory Reporting To Public Health (US Realm), Release 1 **dated October 2011**
  - ELR 2.5.1 Clarification Document for EHR Technology Certification, V1.2 **dated March 2013**

Instructions

1. Client acquires key documents

Client reviews the MU website and acquires the ELR implementation guide and HL7 documents listed in the resources section.

The documents needed include:

1. SC ELR Implementation Guide
2. SC ELR MU Registration
3. SC List of Reportable Conditions
4. SC Laboratory Reporting List
5. Health Level Seven (HL7) Standard Electronic Laboratory Reporting to Public Health-Release 1, Feb 2010
6. Release 1 Errata Document which is part of the ELR251 R1 download from HL7,
7. ELR 2.5.1 Clarification Document for EHR Technology Certification, V1.2

2. Client completes registration

Client completes registration and emails it to muhelpdesk@dhec.sc.gov for the MU registration.

The ELR MU registration can be downloaded from the SC DHEC MU website.

Client must register with DHEC their intent to initiate ongoing submission of ELR messages.

Federal guidance from CMS requires this registration occur within 60 days of the start of the EHR reporting period.

3. Client builds ELR messages

The following tables define the constraints for SC DHEC ELR messages. SC DHEC accepts ELR messages in alignment with:

- HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm) **dated February 2010**
- Errata and Clarifications HL7 v2.5.1 IG: Electronic Laboratory Reporting To Public Health (US Realm), Release 1 **dated October 2011**
- ELR 2.5.1 Clarification Document for EHR Technology Certification, V1.2 **dated March 2013**

File Header Segment (FHS)

(HL7 Guide Table 5 – 16)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
FHS-1	File Field Separator	R	The character used to separate fields is a pipe |.	Literal Value:| (pipe delimiter)
FHS-2	File Encoding Characters	R	The five characters always appear in the same order.	Literal Value: ^~\&#
FHS- 3	File Sending Application	RE	File sending application	Values should match those in MSH-3
FHS-4	File Sending Facility	O		
FHS-5	File Receiving Application	RE		
FHS-6	File Receiving Facility	RE		
FHS-7	File Creation Date/ Time	RE		
FHS-8	File Security			
FHS-9	File Name/ ID			
FHS-10	File Header Comment			
FHS-11	File Control/ ID			
FHS-12	Reference File Control ID			

Batch Header Segment (BHS)

(HL7 Guide Table 5 – 18)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
BHS-1	Batch field Separator	R		Literal Value: |
BHS-2	Batch Encoding Characters	R		Literal Value: ^~\&#
BHS-3	Batch Sending Application	RE		
BHS-4	Batch Sending Facility	O		
BHS-5	Batch Receiving Application	RE		
BHS-6	Batch Receiving Facility	RE	Unique identifier of the facility that is to receive the message. This field has the same definition as the corresponding filed in the MSH segment.	
BHS-7	Batch Creation Date/ Time	RE	Date/ time the batch was created by the sending system.	
BHS-8	Batch Security			
BHS-9	Batch Name/ ID/ Type			
BHS-10	Batch Comment			
BHS-11	Batch Control ID			
BHS-12	Reference Batch Control D			

Message Header Segment (MSH)

(HL7 Guide Table 5 – 1)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
MSH-1	Field Separator	R		Literal Value:| (pipe delimiter)
MSH-2	Encoding Characters	R		Literal Value: ^~\&#
MSH- 3	Sending Application	R	Sending application (values should match those in FHS-3)	
MSH- 4	Sending Facility	R	**Must be a CLIA number.**	For laboratories originating messages, the CLIA identifier is allowed for the Universal ID component of the HD data type.
MSH- 5	Receiving Application	R		
MSH-5.1	Namespace ID	R	Name of the receiving application	Literal " SCDOH "
MSH-5.2	Universal ID	R	Must be OID of the receiving application	Literal Value 2.16.840.1.114222.4.3.2.2.1.179.1
MSH-5.3	Universal ID Type	R	Constrained to the value 'ISO'	Literal Value: "ISO"
MSH- 6	Receiving Facility	R		
MSH-6.1	Namespace ID			Literal Value: SC
MSH-6.2	Universal ID		Must be OID of the receiving facility	Literal Value "2.16.840.1.114222.4.1.3680"
MSH-6.3	Universal ID Type		Constrained to the value 'ISO'	Literal Value: "ISO"
MSH-7	Date/ Time of message	R		
MSH- 8	Security			
MSH-9	Message Type	R		Literal Value: ORU^R01^ORU_R01
MSH-10	Message Control ID	R	Unique Message Id	e.g. 201311220000007 20134514080608207007 20134514080608207007 20134514080608207007 20134514080608207007
MSH-11	Processing ID	R		Must be literal value: T if testing, P if Live
MSH-12	Version ID	R	HL7 Version Number used to interpret the format and content of the message	Literal Value: 2.5.1
MSH- 13	Sequence number			
MSH- 14	Continuation Pointer			

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
MSH- 15	Accept Acknowledgement Type			
MSH- 16	Application Acknowledgement Type			
MSH- 17	Country Code		If empty, the default is 'USA"	
MSH- 18	Character Set		Refer to the HL7 0211 table	
MSH- 19	Principal Language of Message			
MSH- 20	Alternate Character Set Handling Scheme		Refer to the HL7 0356 table	
MSH 21	Message Profile Identifier	R	See HL7 2.5.1 Guide, Section 3.3 Dynamic Definitions for acceptable values	

Software Segment (SFT)
(HL7 Guide Table 5 – 2)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
SFT-1	Software Vendor Organization	R		
SFT-2	Software Certified Version or Release Number	R		
SFT-3	Software Product Name	R		
SFT-4	Software Binary ID	R		
SFT-5	Software Product Information	O		
SFT-6	Software Install Date	RE		

Patient Identifier List (PID)

(HL7 Guide Table 5 – 5)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
PID-1	Set ID- PID	R		Literal Value: '1'
PID-2	Patient ID			
PID- 3	Patient Identifier List	R		
PID- 4	Alternate Patient ID			
PID- 5	Patient Name	R		
PID- 6	Mother's Maiden Name	RE		
PID-7	Patient Date/ Time of Birth	RE		
PID-8	Administrative Sex	RE	Refer to the HL7 0001	e.g. F
PID- 9	Patient Alias			
PID- 10	Patient Race	RE		
PID-11	Patient Address	RE		
PID- 12	County Code		Should NOT be valued	
PID- 13	Phone Number- Home	RE		
PID- 14	Patient Business Phone	RE		
PID- 15	Primary Language	O		
PID- 16	Marital Status	O	Refer to the HL7 0002	e.g. M
PID- 17	Religion	O		
PID- 18	Patient Account Number	O	"|10543^^^Columbia Valley Memorial Hospital&01D0355944&CLIA^AN|"	e.g. 10543
PID- 19	SSN Number- Patient			
PID- 20	Driver's License Number- Patient			
PID- 21	Mother's Identifier	O		
PID- 22	Patient Ethnic Group	RE	Refer to the HL7 0189 table	
PID- 23	Birth Place	O		
PID- 24	Multiple Birth Indicator	O	Use values from HL7 table 0136	
PID- 25	Birth Order	O		
PID- 26	Citizenship	O	Refer to the HL7 0171 table	
PID- 27	Veterans Military Status	O	Refer to the HL7 0172 table	
PID- 28	Nationality			
PID-29	Patient Death Date and Time	RE		

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
PID-30	Patient Death Indicator	RE	Refer to the HL7 0136 table	If PID-29 is valued, then this filed should be populated with "Y" since the patient is known to be dead.
PID-31	Identity Unknown Indicator			
PID-32	Identity Reliability Code			
PID-33	Last Update Date/ Time	RE		
PID-34	Last Update Facility			
PID-35	Species Code	RE	SCDHEC understands most samples will be on human patients. When the sample is of non human origin the species code identifier is required. See PHVS_Animal_CDC value set for acceptable values.	
PID-36	Breed Code			
PID-37	Strain			
PID-38	Production Class Code			
PID-39	Tribal Citizenship			

Next of Kin (NK1)
(HL7 Guide Table 5-6)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
NK1-1	Set ID	R		NK1 is created regardless if any Contact info was present.
NK1-2	Next of Kin Name	O	If next of kin or associated party is a person use this field, otherwise use field NK1-13	
NK1- 3	Relationship	RE		
NK1- 4	Address	RE		
NK1- 5	Home Phone Number	RE		
NK1- 6	Business Phone Number			
NK1- 7	Contact Role			
NK1- 8	Start Date			
NK1- 9	End Date			
NK1- 10	Next of Kin/ Associated Parties Job Title			
NK1- 11	Next of Kin/ Associated Parties Job Code/ Class			
NK1- 12	Next of Kin Associated Parties Employee Number			
NK1- 13	Organization Name - NK1			
NK1- 14	Marital status			
NK1- 15	Administrative Sex			
NK1- 16	Date/ Time of Birth			
NK1- 17	Living Dependency			
NK1- 18	Ambulatory Status			
NK1- 19	Citizenship			
NK1- 20	Primary Language	O		
NK1- 21	Living Arrangement			
NK1- 22	Publicity Code			
NK1- 23	Protection Indicator			
NK1- 24	Student Indicator			
NK1- 25	Religion			
NK1- 26	Mother's Maiden Name			
NK1- 27	Nationality			
NK1- 28	Ethnic Group			
NK1- 29	Contact Reason			
NK1- 30	Contact Person's Name			

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
NK1- 31	Contact Person's Telephone Number	RE		
NK1- 32	Contact Person's Address	RE		
NK1- 33	Next of Kin/ Associated Party's Identifiers			
NK1- 34	Job Status			
NK1- 35	Race			
NK1- 36	Handicap			
NK1- 37	Contact Person Social Security Number			
NK1- 38	Next of Kin Birth Place			
NK1- 39	VIP Indicator			

Common Order Segment (ORC)
(HL7 Guide Table 5 – 9)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
ORC- 1	Order Control	R	Determiner of the function of the order segment. In the ORU^R01 this should be the literal value:"RE". Refer to HL7 table 0119 for values.	Literal Value: RE
ORC- 2	Placer Order Number	RE	Must contain the same value as OBR-2, if populated	
ORC-3	Filler Order Number	R	Must contain the same value as OBR-3	Should NOT be the accession number. Accession number should be in SPM-2
ORC- 4	Placer Group Number	RE		
ORC-5	Order Status			
ORC-6	Response Flag			
ORC-7	Quantity/ Timing			
ORC-8	Parent			
ORC-9	Date/ Time of Transaction			
ORC-10	Entered By			
ORC-11	Verified By			
ORC-12	Ordering Provider	RE	If OBR- 16 Ordering Provider is populated, this field will contain the same value.	Must have either Ordering Provider or Ordering Facility, preferably both.
ORC- 13	Enterer's Location			
ORC- 14	Call Back Phone Number	RE	If OBR-17 Callback Phone Number is populated, this field will contain the same value. This should be a phone number associated with the original order placer.	
ORC- 15	Order Effective Date/ Time			
ORC- 16	Order Control Code Reason			
ORC- 17	Entering Organization			
ORC- 18	Entering Device			
ORC- 19	Action By			
ORC- 20	Advanced Beneficiary Notice Code			

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
ORC- 21	Ordering Facility Name	R	Either Ordering Provider or Facility must be provided	Prefer both be populated
ORC- 22	Ordering Facility Address	R		
ORC-23	Ordering Facility Phone Number	R		
ORC-24	Ordering Provider Address	RE		
ORC- 25	Order Status Modifier			
ORC- 26	Advanced Beneficiary Notice Override Reason			
ORC- 27	Filler's Expected Availability Date/ Time			
ORC- 28	Confidentiality Code			
ORC- 29	Order Type			
ORC- 30	Enterer Authorization Mode			
ORC- 31	Parent Universal Service Identifier			

Observation Request Segment (OBR)

(HL7 Guide Table 5 – 10)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBR- 1	Set ID- OBR	R	|1|, |2|, |3|, etc for repeating OBRs.	e.g. 1
OBR- 2	Placer Order Number	R	It should be populated	
OBR- 3	Filler Order Number	R	Normally this is a system identifier assigned by the filler software system.	OBR-3 can no longer be the same value in messages containing multiple OBR segments. Each OBR in a multiple resulted test MUST be unique in order to make parent/child relationships.
OBR-4	Universal Service Identifier	R	Strongly recommend using Laboratory Order Value Set from HITSP	Strongly recommend Lab Order Value Set which is based on LOINC
OBR- 5	Priority- OBR			
OBR- 6	Requested Date/Time			
OBR- 7	Observation Date/ Time	R	This field must contain the same value as the SPM- 17.1 Specimen Collection Date/ Time.	
OBR- 8	Observation End Date/ Time	O	The end point time when the specimen was collected. This field must contain the same value as the second component of SPM- 17 Specimen Collection Date/ Time.	
OBR- 9	Collection Volume			
OBR- 10	Collector Identifier			
OBR- 11	Specimen Action Code			
OBR- 12	Danger Code			
OBR- 13	Relevant Clinical Information	RE		
OBR- 14	Specimen Received Date/Time			
OBR- 15	Specimen Source		No longer supported. Now in SPM segment.	

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBR- 16	Ordering Provider	RE	Identifier of the provider who ordered the testing being performed. ORC-12 Ordering Provider is constrained to contain the same value as this field.	Defined as Required but can be empty, however Ordering Provider or Ordering Facility must be present, preferably both are present.
OBR- 17	Order Callback Phone Number	RE	If this field is populated, then ORC-14 will contain the same value. This phone number should be associated with the original order placer.	This is the number the SCDHEC can call with questions regarding the order. This should be a phone number associated with the original order placer.
OBR- 18	Placer Field 1			
OBR- 19	Placer Field 2			
OBR- 20	Filler Field 1	O		
OBR- 21	Filler Field 2	O		
OBR-22	Results Rpt/ Status Change Date/ Time	R		
OBR- 23	Charge to Practice			
OBR- 24	Diagnostic Serv Sect ID			
OBR-25	Result Status	R	HL7 0123 Table	e.g. F
OBR- 26	Parent Result	R	This field is required when linking child sensitivities to the parent culture.	Used along with OBR-29 to allow this result to be linked to a specific OBX.
OBR- 27	Quantity/Timing			
OBR- 28	Result Copies To			
OBR- 29	Parent	R	See Appendix A of reference for detailed examples	Required if Micro Culture & Sensitivity
OBR- 30	Transportation Mode			
OBR- 31	Reason for Study	RE	Use Reason For Study Value Set. ICD9 is used currently and ICD10 will be allowed when the US starts using it.	
OBR- 32	Principal Result Interpreter	RE		
OBR- 33	Assistant Result Interpreter			
OBR- 34	Technician			
OBR- 35	Transcriptionist			
OBR- 36	Scheduled Date/ Time			

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBR- 37	Number of Sample Containers			
OBR- 38	Transport Logistics of Collected Samples			
OBR- 39	Collector's Comment			
OBR- 40	Transport Arrangement Responsibility			
OBR- 41	Transport Arranged			
OBR- 42	Escort Required			
OBR- 43	Planned Patient Transport Comment			
OBR- 44	Procedure Code			
OBR- 45	Procedure Code Modifier			
OBR- 46	Placer Supplemental Service Information			
OBR- 47	Filler Supplemental Service Information			
OBR- 48	Medically Necessary Duplicate Procedure Reason			
OBR- 49	Result Handling			
OBR- 50	Parent Universal Service Identifier	O		

Observation/Result Segment (OBX)

(HL7 Guide Table 5 – 12)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBX-1	Set ID - OBX	R	Sequence Number of OBX within this OBR	Increment repeats
OBX-2	Value Type	R	If OBX- 5 is populated, OBX- 2 is required. See Section 6.1.1.1, table HL7 0125 for values.	e.g. CE
OBX-3	Observation Identifier	R	Unique Identifier for the type of observation. OBX-3 in conjunction with OBX-4 Observation Sub ID should uniquely identify this OBX from all other OBXs associated with this OBR	
OBX 4	Observation Sub- ID	RE	Value this field if there is more than one OBX with the same OBX- 3 Observation Identifier associated with the same OBR.	
OBX 5	Observation Value	RE	Refer to the HL7 0125 table from HL7 2.5.1 Implementation Guide for values.	SC DHEC accepts only results in this field. If results include comments, please place the comments in NTE-3.
OBX 6	Observation Units	RE	If the data type in OBX 2 is "NM" or "SN" and the OBX -11 observation result status is not "X" then this field is required.	
OBX 7	Reference Range	RE		
OBX 8	Abnormal Flags	RE	Indicator of the normality of the result found in OBX-5. Cardinality indicates the possible need for multiple abnormal flags. Refer to the HL7 0078 table from HL7 2.5.1 Implementation Guide for values.	
OBX 9	Probability			
OBX 10	Nature of Abnormal Test			

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBX 11	Observation Result Status	R	See HL7 table 0085 Status of the observation result. Values are: C – Corrected result F - Final Results P - Preliminary	e.g. F
OBX 12	Effective Date of Reference Range			
OBX 13	User- Defined Access Checks			
OBX 14	Date/ Time of the observation	R	For observations related to the testing of a specimen, OBX-14 (Date/ Time of the Observation) shall contain specimen collection time and will be the same value as OBR-7 and SPM-17.1.	
OBX- 15	Producer's ID	RE	If populated the field must identify the same performing organization as that identified in OBX-23 (Performing Organization Name).	
OBX- 16	Responsible Observer			
OBX 17	Observation Method	RE	Method of testing by the laboratory. If the LOINC code in OBX-3 is methodless, this field shall be populated. Sometimes the method may be extrapolated from the local test codes.	
OBX- 18	Equipment Instance Identifier			
OBX 19	Date/ Time of the Analysis	RE	Time at which the testing was performed.	
OBX- 20	Reserved for harmonization with Version 2.6			
OBX 21	Reserved for harmonization with Version 2.6			
OBX 22	Reserved for harmonization with Version 2.6			
OBX- 23	Performing Organization Name	R	Name of the laboratory that produced the test result.	

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
OBX- 24	Performing Organization Address	R	Address of laboratory that actually performed the test	
OBX- 25	Performing Organization Medical Director	RE		

Specimen Segment (SPM)
(HL7 Guide Table 5 – 14)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
SPM-1	Set ID- SPM	R		Literal value 1
SPM- 2	Specimen ID	R		May be the Lab Accession Nbr
SPM- 3	Specimen Parent IDs			
SPM- 4	Specimen Type	R	Specimen Type Value Set	
SPM- 5	Specimen Type Modifier	RE	Allows sending qualifiers for a SNOMED CT term from a single axis. **Only used if SPM- 4 is a SNOMED code.**	
SPM- 6	Specimen Additives	RE	Refer to the HL7 0371 table	
SPM- 7	Specimen Collection Method	RE	Method used to collect the specimen	
SPM- 8	Specimen Source Site	RE	Source from which the specimen was obtained	For biological specimens, the anatomical site.
SPM- 9	Specimen Source Site Modifier	RE	Modifier or qualifier for the specimen source site (SPM-8). Only used if SPM-8 is a SNOMED code.	
SPM- 10	Specimen Collection Site	O	Refer to HL7 Table 0543 for values.	
SPM- 11	Specimen Role	RE	Refer to the HL7 0369 table from HL7 2.5.1 Implementation Guide for values.	
SPM- 12	Specimen Collection Amount	RE	Amount of sample collected. Can be reported as a volume or a weight/ mass. Unified Code for Units of Measure (UCUM)	
SPM-13	Grouped Specimen Count			
SPM-14	Specimen Description			
SPM-15	Specimen Handling Code		Refer to the HL7 0376 table	
SPM-16	Specimen Risk Code		Refer to the HL7 0489 table	
SPM- 17	Specimen Collection Date/ Time	R	For OBXs reporting observations based on this specimen, OBX-14 should contain the same value as component 1 of this field.	
SPM- 18	Specimen Received Date/ Time	R		

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
SPM- 19	Specimen Expiration Date/ Time	O		
SPM- 20	Specimen Availability	O	Refer to the HL7 0136 table	
SPM- 21	Specimen Reject Reason	O	Refer to the HL7 0490 table	
SPM- 22	Specimen Quality	O	Refer to the HL7 0491 table	
SPM- 23	Specimen Appropriateness		Refer to the HL7 0492 table	
SPM- 24	Specimen Condition		Refer to the HL7 0493 table	
SPM- 25	Specimen Current Quantity			
SPM- 26	Number of Specimen Containers			
SPM- 27	Container Type			
SPM- 28	Container Condition		Refer to the HL7 0544 table	
SPM- 29	Specimen Child Role		Refer to the HL7 0494 table	

Notes and Comments Segment (NTE)
(HL7 Guide Table 5 – 15)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
NTE-1	Set ID	R	Sequential numbering of repeats	|1|
NTE-2	Source of Comment	RE	See HL70105 table	e.g. L
NTE-3	Comment	R		Comment contained in the segment.
NTE-4	Comment Type	RE	See HL70364	

Batch Trailer Segment (BTS)
(HL7 Guide Table 5 – 19)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
BTS- 1	Batch Message Count	R	This is the total Number of messages contained in the batch.	e.g. 1
BTS- 2	Batch Comment			
BTS- 3	Batch Totals			

File Trailer Segment (FTS)
(HL7 Guide Table 5 – 17)

Sequence Number	HL7 2.5.1 Data Element Name	Required by DHEC	Data Element Notes	Recommended Values and Examples
FTS- 1	File Batch Count	O	The Number of batches contained in this file. Since this interface is constrained to one batch per file, this Number should always be '1'	e.g.1
FTS- 2	File Trailer Comment	X		

4. Client validates message

Client validates message using:

- NIST ELR Validation Tool
- CDC's Message Quality Framework (MQF) (Reporting Receiver Profile).

Test a variety of messages if applicable to your Laboratory's capabilities (hepatitis, HIV, STD, parasitology, Lead, Micro C&S, etc.) to ensure messages meet the requirements.

Client performs structural, vocabulary and constraint validation on the messages. The messages should be validated using one or both of the following tools CDC's Message Quality Framework (MQF) or NIST Validation Tool. Messages that are not pre-validated will not be tested at SC DHEC.

Each validation tool has its own strengths. The NIST tool provides good feedback on message structure while the CDC's MQF tool provides good feedback on message vocabulary.

Both the PHIN MQF and the NIST website have links to User Manuals and FAQs and Support Desk for questions and other helpful links.

Another nice reference: NIST's Google groups for developers (HL7v2 ELR Testing): https://groups.google.com/d/forum/hl7v2-reportable-lab-testing

5. Client emails validation reports to SCDHEC

Client emails validation reports to reflect progress to muhelpdesk@dhec.sc.gov.

With a zero-error validation report, the client needs to send the report with a .txt file of the message using TEST DATA.

6. SC DHEC reviews messages and confirms validation reports

SC DHEC will validate the messages for structure and vocabulary. SC DHEC will notify clients regarding time frame for reviewing the test messages.

7. SC DHEC sends transport mechanism implementation package to client

SC DHEC sends PHINMS or SFTP implementation package to client based on information provided in the questionnaire.

Note: SFTP is acceptable for Stage 1 and PHINMS for Stage 2.

8. Client implements transport mechanism capability at sender location

Client implements PHINMS or SFTP capability at sender location by following the instructions in the

related implementation package.

9. Client reports successful implementation of sender transport mechanism capability

Client reports successful implementation of sender PHINMS or SFTP capability to DHEC @ muhelpdesk@dhec.sc.gov

10. SC DHEC manages testing of transmission capability

SC DHEC works with client until PHINMS or SFTP transmission capability between sender and SC DHEC meets requirements.

11. Client transmits initial VALIDATED batch of test messages

Client transmits initial VALIDATED batch of test messages from sender's electronic health record (EHR) system.

Client transmits to SC DHEC a VALIDATED batch file containing one of each of the following HL7 ORU^R01 messages.

ELR files should be saved: ELRxxxYYYYMMDD.HL7

SC DHEC will provide a 3-character filename.

Client then notifies SC DHEC @ muhelpdesk@dhec.sc.gov

12. SC DHEC confirms message receiving and sends confirmation letter if needed

SC DHEC confirms on the messages received. If the client requests it, SC DHEC issues a letter confirming that the sender completed an ELR HL7 messaging test.

-- STOP HERE FOR MU STAGE 1—

-- CONTINUE STEPS BELOW FOR MU STAGE 2 --

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13. Client transmits more VALIDATED test message batch files from sender's EHR system

The client transmits VALIDATED test message **batch** files from the sender's EHR system to SC DHEC for the purposes of content validation. In order for SC DHEC to complete this phase of its testing, it must receive enough ELR messages to allow it to validate all data fields for all types of lab results. **The client should consider all fields labeled "RE" and "CE" to be "R" for the purposes of this testing.**

The client is required to VALIDATE the messages before sending to SC DHEC. A screen capture of the CDC's Message Quality Framework (MQF), or NIST's HL7 validation tool results pasted into a Word document for each message will be sufficient.

File transfer process:

- Client transmits to SC DHEC a VALIDATED batch file containing diverse lab result messages via the transport mechanism.
- The client should consider all fields labeled “RE” and “CE” to be “R” for the purposes of this testing.
- File should be generated and delivered to SC DHEC via a secure transfer by 6:00 a.m. each day.

14. SC DHEC validates message contents

SC DHEC validates that the contents of the messages meets its requirements. As issues are identified, SC DHEC reports them to the client for resolution. SC DHEC will review the submitted validation tool results in addition to re-validating the same message files. Each clean revalidation by SC DHEC will move the facility closer to production status. If any message fails the re-validation process the facility will be notified that they need to address their errors and resubmit their test data.

15. Go live after consecutive valid test message files

Once the content of the messages has been validated in Step 13, SC DHEC and clients are now ready to put messaging into production.

After the provider signs a data use agreement, SC DHEC and the client work together to implement ongoing electronic submission of ELR data from the provider to DHEC.